Exemption No. 9791

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98057-3356

In the matter of the petition of **The Boeing Company** for exemption from § 25.853(a) of Title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2008-1249**

PARTIAL GRANT OF EXEMPTION

By letter B-H300-08-DML-54, dated November 18, 2008, Mr. Douglas Lane, Director, Airplane, Certification and Regulatory Affairs, The Boeing Company, P.O. Box 3707, Seattle, Washington 98124-2207, petitioned for exemption from § 25.853(a), Title 14, Code of Federal Regulations (14 CFR), as amended by Amendment 25-64. The proposed exemption, if granted, would permit temporary relief from the flammability-testing requirements for various interior panels on multiple Boeing airplane types, as listed in the petition.

The petitioner requests relief from the following regulations:

> Section 25.853(a) requires that large interior panels be tested in accordance with Appendix F, part I, paragraph (a)(1)(i).
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> Appendix F, part I, paragraph (a)(1)(i) includes the provision that "…fabricated units, such as sandwich panels, may not be separated for test…" The appendix further requires "…the edge to which the burner flame is applied must not consist of the finished or protected edge of the specimen but must be representative of the actual cross-section of the material or part installed in the airplane."

The petitioner supports their request with the following information:

Statement of No Adverse Effect to Safety

Granting of this petition will not adversely affect aviation safety, as demonstrated by the service experience of the Boeing model series airplanes listed below. There have been no unsafe conditions or events on the Boeing model series airplanes listed in Table 1.0 that have been attributable to, or increased the severity thereof, by use of these adhesives and process, as described in the additional proprietary information provided separately to the FAA Transport Airplane Directorate.

In addition, the material in question is used in very small quantities within an interior that exceeds the fire safety requirements set forth by the applicable FAA regulations. For example, for a typical 80-inch stowage bin, the volume of adhesive is 2.2% of the total volume. The small concentrations of this material compared to the total volume of materials used in the interior provide no appreciable affect on the overall fire safety of the passenger cabin. This is not a novel or unusual design feature, as this practice goes back 8 years at Boeing and much longer (i.e., at least to 1981) at suppliers to the aircraft industry. The adhesives in question, while not complying fully with the requirements of 14 CFR 25.853(a), Appendix F, has been shown via test to have flammability characteristics that indicate small amounts of the adhesives do not cause a safety issue. Based on the investigation of both internal and fleet safety databases, there is no service experience to indicate that this configuration is not safe for continued operation.

Statement of Public Interest

Granting of this petition is in the public interest because it will allow Boeing to continue to provide products that improve the overall safety relative to previously certificated airplanes, while reducing operational costs by reducing the amount of fuel consumed. The number of aircraft delivered under this exemption will be small compared to the number of aircraft with this condition already in-service, so continued delivery will not have an adverse effect on overall fleet safety.

Given that these adhesives have been used across Industry, Boeing anticipates some time will be required for FAA to standardize an appropriate method of compliance.

Granting this petition for the 3-year period requested will enable Boeing deliveries to continue while (1) the FAA standardizes the requirements, (2) Industry develops and qualifies a new adhesive that meets structural as well as flammability requirements, and (3) the compliant adhesive can be implemented into production for Boeing and other aircraft manufacturers. In addition, Boeing will be able to provide products to meet the demand of air travel as required by continued economic growth, further benefiting the public and economy by

providing critical U.S. export revenue and U.S. employment through domestic and foreign sales including Asia, Europe, and the Middle East.

The petitioner lists the following Boeing airplane models affected by this exemption:

- DC-9
- MD-80
- MD-90
- DC-10
- MD-11
- 737
- 747
- 757
- 767
- 777
- 787

In accordance with § 11.81(h), The Boeing Company also requests the privileges of the requested exemption be extended outside of the United States. This extension of privileges is necessary for operations based within foreign countries having bilateral agreements with the United States accepting Federal Aviation Administration 14 CFR part 25 as their airworthiness standards for transport category aircraft.

In addition, due to the potential for significant delays to aircraft delivery, as well as the time-limited nature of the petition, The Boeing Company requests that the FAA find good cause under 14 CFR 11.87 and waive the need for the public process described in 14 CFR 11.85.

Federal Register publication

The FAA has determined that good cause exists for waiving the requirement for Federal Register publication of this exemption for public comment because any delay in acting on this petition would be detrimental to The Boeing Company and disruptive to air commerce. The airplanes that are the subject of this exemption are scheduled for imminent delivery. In accordance with § 11.87, the FAA has not solicited public comment before granting this exemption. However, a summary of this petition is being published, and the FAA will consider public comments received before granting similar exemptions for other airframe manufacturers that have designs covered by this petition. Further, this granting may be amended in response to public comments, or any other relevant information, received subsequent to this granting.

The FAA's analysis

The FAA has reviewed the information provided by Boeing and has concluded that partially granting this exemption is in the public interest. Several factors influence our determination.

First, we agree that the exemption would have minimal impact on safety as it relates to interior panels and related adhesives. The petitioner has conducted numerous tests, using the rate-of-

heat-release and flame-propagation standards contained in part 25, Appendix F, parts IV and VI, respectively, that indicate the material is safe to remain in service. Although the panels with adhesive do not comply with the literal requirements of Appendix F, part I, their performance on these other tests suggests that they perform comparably to materials that do comply.

We also note that the panels in question are, for the most part, not covered by the requirements of heat release and smoke emissions, of part 25, Appendix F, part IV and V. Interior components that have the greatest effect on post-crash fire safety must comply with those requirements. That is, the panels for which we allow exemption are considered less significant from a fire-safety standpoint, and must only comply with the less-stringent Bunsen Burner requirements of Appendix F, part I. Thus, based on the tests conducted by the petitioner, we have more information about the overall fire safety of these materials than we would if they had passed the required test.

Second, as noted in the petition, these designs have been employed for over ten years and are well-entrenched with Boeing and its suppliers. Boeing did not identify the fact that the materials in question had not been tested in accordance with the rule. In these designs, the use of epoxy adhesive, which has structural qualities and is used as a joint filler, differs from the way the adhesive is usually used. In typical applications, the adhesive is applied to a surface in limited quantity and lies between two different parts (such as a galley side panel and back panel). In this case, the adhesive is used in quantities and locations that make it part of a “fabricated part” as discussed in, and subject to, Appendix F part I. It appears that the focus of the petitioner’s certification effort was on the type of material (adhesive) rather than the application (joint filler), and the need for testing the adhesive as being part of the panels was overlooked. Because the adhesive application is specialized and has been employed for so long, there is no immediate substitute available. Other mitigation means, such as a protective layer tested to higher-level standards, are impractical to implement on all parts and would result in significant disruption to airplane deliveries. If we deny this petition, the required safety improvement would be minimal; however, the impact would be significant not only for Boeing, but also for its suppliers and customers.

As alluded to in the petition, we have reason to believe that Boeing is not the only manufacturer using epoxy adhesive in this application. In that case, it is likely that other manufacturers are also producing parts that are not in compliance, but for which the FAA does not yet have visibility. In addition, such other companies themselves are very likely unaware that they have a compliance issue. While each case is different, a limited number of materials and construction techniques are in use in the industry. Given the results of the testing Boeing has done, it is also unlikely that a significant safety issue is associated with other manufacturers’ projects. However, each situation must be judged on its own merits. Denial of this exemption request could result in a disparity between Boeing and other manufacturers even though Boeing’s products do not pose a safety concern.

In addition to the above, this exemption is temporary. Boeing and the FAA agree that, while the current design is not unsafe, it does not comply and should be changed. Boeing has requested a 3-year period within which to comply. The FAA considers this excessive. Although substitute adhesives currently are not available, other means of achieving an equivalent level of safety

exist. The major challenge with these other means is the amount of time required to produce the necessary data, and potentially to perform modifications on an extensive number of parts. While the FAA agrees that a substitute adhesive is the preferred solution, and is aware that this is being pursued with Boeing and its suppliers, other means could be adopted in much less than 3 years. However, to allow time for an adhesive solution to be developed, and to avoid further requests for extension, the FAA agrees that an exemption that expires in the minimum time required to implement the minimum solution is not in the public interest. Thus, the FAA will require that Boeing implement new designs that comply with the rule within 2 years. Considering the number of airplanes already delivered, and the relatively few that will be added to the fleet, this exemption does not appreciably change the current situation.

Supplemental Type Certificate (STC) Holders and Applicants

Because Boeing is petitioning for this exemption for amended Type Certificates, Boeing would be exempt from the requirements of § 25.853(a) upon the FAA granting an exemption. However, if the FAA grants Boeing's exemption, applicable STC holders and applicants would have to comply with the requirements of § 25.853(a) for the same airplanes. The FAA considered the impact on these entities as well, and whether a grant of exemption should be expanded to the applicable STC holders and applicants. In this case, it would be inconsistent to require compliance of STC holders and applicants for the same airplanes for which Boeing has been granted an exemption, or which are already in service.

The FAA's decision

In consideration of the foregoing, I find that a partial grant of time-limited exemption, until November 28, 2010, is in the public interest, and will not adversely affect safety. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator (14 CFR 11.53), The Boeing Company is hereby granted an exemption from the flammability testing requirements of 14 CFR 25.853(a), to the extent required to permit type certification of the Boeing airplane types noted in the referenced petition until November 28, 2010. The following limitations apply to this exemption:

This exemption is limited to the Boeing and former McDonnell Douglas airplane models noted in the petition and applies to the following adhesives:

- BMS 5-92 Type I (3M Scotchweld EC2216B/A)
- BMS 5-92 Type V (3M Scotchweld EC2615B/A)
- JD Lincoln L-301
- JD Lincoln L-301R
- BMS 5-107 (Araldite 420 A/B)
- Lord 270 A/B
- 3M Scotchweld 9323-2 A/B
- Aerobond 1507 A/B
- Aerobond 1508 A/B (fire retardant)

In addition, this grant is extended to those STC holders and applicants that modify or have modified the airplanes listed above during the period of this exemption.

Issued in Renton, Washington, on November 28, 2008

/s/

Ali Bahrami
Manager
Transport Airplane Directorate
Aircraft Certification Service